

# TERRESTRIAL MAMMALS IN VICTORIA—A HISTORY OF DISCOVERY

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The history of discovery of non-marine mammals in Victoria by Europeans is traced by reference to literature and museum records. Three phases of discovery and documentation are recognised. Before the establishment of the National Museum of Victoria (now Museum of Victoria) in 1854, most records are literature-based, although some specimens were sent to European museums. After 1854, the formal collection and curation of natural history material, coupled with organised collecting expeditions, set the scene for official checklists of species to be prepared. Modern understanding of distribution, habitat use and ecology have been used to synthesise as complete a record as possible and to clarify some questionable identities of species present.

THE MOST recent list of mammals recorded for Victoria (DCE 1991) includes 112 non-marine species, of which 91 are native. Seventy-one of these are still extant in the State. The distribution of all species is increasingly being documented in the Atlas of Victorian Wildlife (Menkhorst 1987a) and an understanding of status and conservation prospects also continues to grow. However, this understanding has been almost 200 years in the making. This paper traces the development of knowledge about the species of native terrestrial mammals that were present in Victoria at the time of European contact.

## METHODS

The information presented is largely derived from literature surveys and from examination of records held at the Museum of Victoria.

I have searched the entries in Ferguson's Bibliography (1941–69) to direct my investigations to relevant works published before the establishment of the Museum of Victoria in 1854, when formal documentation of the State's fauna began.

Current knowledge of the distribution (Atlas of Victorian Wildlife database), habitat and ecology of Victoria's mammals has been used to identify the species in some early reports.

I have used the modern vernacular names accepted by the Australian Mammal Society and the Department of Conservation and Natural Resources, Victoria.

## RECORDS BEFORE 1854

The first report of non-marine mammal from what is now Victoria was that of George Bass, who, in January 1798, discovered and explored Western Port. He noted that, during his 12 days there, he saw 'a few of the brush kangaroo, the wallabah, but no other kind' (Rawson 1946). Three species

of wallaby may have occurred in the region—the Black Wallaby, *Wallabia bicolor*, which is still extant on Phillip Island and the adjoining mainland; the Red-necked Wallaby, *Macropus rufogriseus*, for which there are no formal records but for which habitat was suitable at Western Port (the nearest population is at Rosedale in South Gippsland); and the Red-bellied Pademelon, *Thylogale billiardierii*, which is now extinct in Victoria. Although none of these species had been formally named at that time, Bass would have been familiar with *W. bicolor* and *M. rufogriseus*—the latter is still widely known at the Brush Wallaby. However, it is not now possible to identify with certainty the species (and there may well have been more than one) seen by Bass.

The *Sydney Cove* was wrecked on Preservation Island in Bass Strait in 1797. The survivors set out for Sydney but their boat was wrecked on the Victorian coast 12 days later. They then attempted to walk to Sydney (Rawson 1946). Barker & Caughley (1992) noted that the survivors obtained a kangaroo tail from aborigines, and suggested that this took place in Victoria. I have calculated the distance travelled by the party, and the event must have occurred on the New South Wales south coast—they had walked some 270 miles (340 km) by their reckoning from their starting point near Cape Everard (50 km from the New South Wales/Victorian border) by that time.

Lieutenant James Grant explored Western Port in March 1801, and on Churchill Island found 'burrows' which he 'supposed to be those of the bandicoot rat' (the Southern Brown Bandicoot, *Isodon obesulus* is common around Western Port, though there are no modern records from any of the islands). He also saw kangaroo and Dingo (*Canis familiaris*) tracks, and one of his dogs was attacked by an unknown animal (Grant 1803). Nearly a year later, Lieutenant John Murray

was at Western Port, and in February 1802 discovered Port Phillip Bay. Apart from recording that the natives wore possum skin cloaks he made no mention of land mammals in his journal (Lee 1915).

Even Matthew Flinders, hard on the heels of Murray into Port Phillip, only recorded seeing a 'kangaroo' (probably the Eastern Grey Kangaroo, *Macropus giganteus*) near the foot of the You Yangs during his explorations in May 1802 (Flinders 1814). The botanist with Flinders, Robert Brown, recorded a Dingo, as well as tracks and droppings of kangaroos, and noted that the natives wore kangaroo skin cloaks (Willis & Skewes 1955). Peter Good, the gardener on Flinders' ship 'Investigator' also saw tracks of both Dingo and kangaroo (Austin 1974).

The next visitors to Port Phillip, in January 1803, were Lieutenant Charles Robbins and party, which included Charles Grimes, the Surveyor-General, and James Flemming, a gardener. Their account contains no records of land mammals, despite providing a detailed record of the appearance of the countryside (Shillinglaw 1879).

Two accounts of the short-lived settlement at what is now Sullivans Bay, near Sorrento, in 1803-04 provide records of mammals. The Reverend Robert Knopwood recorded the measurements of a male *M. giganteus* which formed the main course for dinner on 14 November 1803 (Shillinglaw 1879). James Tuckey (1805) commented on the natives' use of possums (Common Brushtail Possum, *Trichosurus vulpecula*) and kangaroos, and listed kangaroos (in 'considerable numbers'), native dog, opossum, flying squirrel (Sugar Glider, *Petaurus breviceps*) and 'field-rat'—probably the Swamp Rat *Rattus lutreolus*. The Bush Rat, *R. fuscipes*, is not recorded for the Mornington Peninsula (Atlas of Victorian Wildlife).

William Buckley lived with aborigines around the Geelong-Otway area for 27 years, between 1808 and 1835. An account of his life during those years was published in 1852 (Morgan 1852). Buckley reported hunting and eating a number of native mammal species, but it is not possible to date the records precisely. Included in his diet, and sometimes also used for skins for clothing, were kangaroo (Eastern Grey Kangaroo, but may also have included Black Wallaby and Red-necked Wallaby), possum (Common Brushtail Possum), Dingo, Fur Seal (*Arctocephalus pusillus*), kangaroo-rat (possibly Long-nosed Potoroo, *Potorous tridactylus*, but may have also been Tasmanian Bettong, *Bettongia gaimardi*), 'squirrels' (Sugar Glider, *Petaurus breviceps* or Yellow-bellied Glider, *Petaurus australis*), Koala (*Phascolarctos cinereus*),

Wombat (Common Wombat, *Vombatus ursinus*), rats and mice (Bush Rat, *Rattus fuscipes* and Swamp Rat, *Rattus lutreolus*, are both present in the area, as are several species of *Antechinus* and at least one of *Sminthopsis*, all of which are often called 'Marsupial Mice').

During Hume and Hovell's journey to Port Phillip in 1924-25, Bland (1831) recorded kangaroos and wombats (Common Wombat). Hovell's journal of his second visit to the Port Phillip District, in 1826-27 (Hibbins 1984) records the hunting of kangaroos with dogs, and the use of kangaroo meat and skins by aborigines on the northern part of the Mornington Peninsula. Kangaroos were 'plentiful' around the 1826-28 settlement at Corinella, in Western Port (Wcatherall 1826).

Settlement (and exploration) of Victoria really began in 1834, and accounts by settlers and explorers during the mid to late 1830s record some encounters with native mammals. Edward Henty set his dogs onto kangaroos (probably the Eastern Grey Kangaroo, but may have included the Western Grey Kangaroo, *Macropus fuliginosus*) early in December 1834, and Dingoes were a continuing problem to his flocks of sheep in south-western Victoria (Basset 1954). Henty also reported that kangaroos were 'getting thin, being much hunted'. He also was probably the first person to introduce Rabbits, *Oryctolagus cuniculus*, to Victoria, four being landed at Portland on 19 December 1834, from Launceston (Learmonth 1934).

Joseph Hawdon overlanded cattle from New South Wales to Adelaide in 1838, basically following the course of the Murray River after crossing it near Howlong. His journal (Hawdon 1952) contains many accounts of encounters with kangaroos (Eastern Grey Kangaroo); no doubt later encounters, as he travelled westwards, were with Western Grey Kangaroos and the Red Kangaroo, *Macropus rufus*. However, he did not distinguish between the species in his account. He collected two different types of small kangaroo. One was a 'small kangaroo of a fawn colour, with a most beautiful head, and about the size of an English hare' (probably Rufous Bettong, *Aepyprymnus rufescens*) and, the other had 'head and fur similar to those of a hare, with hairy hind feet, about the size of rabbit' (probably Eastern Hare-wallaby, *Lagorchestes leporides*). He recorded that the natives caught 'different species of kangaroo, from the large-sized one, weighing 100 pounds, to the small Kangaroo rat'. The latter was probably one of the species of *Bettongia*, either Burrowing Bettong, *B. lesueur* or Brush-tailed Bettong, *B. penicillata*. However, there are no acceptable records of *B. lesueur* being present in Victoria at

the time of contact (Menkhorst 1987). Hawdon had also seen 'a mouse of the kangaroo tribe' (Mitchell's Hopping-mouse, *Notomys mitchelli*), but did not record where that event occurred.

Major Sir Thomas Mitchell made the first scientific expedition into Victoria in 1836 (see Eccleston 1992:32 for a map of his route through western Victoria) and, although his journal (Mitchell 1839) does not contain records of many mammal species, it is notable for its original descriptions of Pig-footed Bandicoot, *Chaeropus ecaudatus* [the only record from Victoria (Wakefield 1966; Menkhorst and Seebeck 1990)] and Mitchell's Hopping-mouse, and for first reports in Victoria of Platypus, *Ornithorhynchus anatinus*, and the rodents *Conilurus albipes* (Rabbit-eared Tree-rat), *Leporillus conditor* (Greater Stick-nest Rat) and *L. apicalis* (Lesser Stick-nest Rat) (Mahoney 1982). Eccleston (1992) pinpoints the capture location of *Conilurus albipes* to near modern-day St Arnaud, but casts some doubt as to whether either species of the stick-nest rats was actually collected in Victoria. I have retained both species in Table 1 for now. Mitchell also recorded kangaroos (and most certainly would have encountered Eastern and Western Grey Kangaroos and Red Kangaroo), possums (Common Brushtail Possum) and Dingo. His compilation of a native vocabulary includes words for bandicoot but the species to which this may refer is unclear.

The growth of knowledge about native mammals accelerated, as settlers and hunters became familiar with the bush and its inhabitants.

Dr Edmund Hobson, who lived in Victoria between 1839 and 1848 established an anatomical museum and provided specimens of Australian fauna to Sir Richard Owen in London. In 1839 he recorded, on the Mornington Peninsula, Eastern Quoll, *Dasyurus viverrinus*; 'Peramelis or bandicoot' (probably *Isoodon obesulus*, but perhaps *Perameles nasuta*; this latter species has only recently (1989) been recorded for the Peninsula); Koala; Wombat; Common Brushtail Possum; Common Ringtail Possum, *Pseudocheirus peregrinus*; Feathertail Glider, *Acrobates pygmaeus* and Eastern Grey Kangaroo (Kenyon 1930). In that same year he travelled from Melbourne to the Murray River with Lady Franklin, and recorded many native mammals, the most significant being the capture by a cat of a 'fine "rabbit rat"'; his description identifies it as *Conilurus albipes*. The streams (Goulburn, Broken, Ovens and Murray Rivers) and lagoons teemed with Platypus and Water Rat, *Hydromys chrysogaster*, and the forests supported Common Brushtail Possum, phalangers (probably Sugar Glider, since he describes other as 'flying squirrels ... their shrill screams'—i.e. Yellow-bellied Glider, *Petaurus*

MONOTREMATA	MACROPODIDAE
<i>Tachyglossus aculeatus</i>	<i>Lagorchestes leporides</i>
<i>Ornithorhynchus anatinus</i>	<i>Macropus fuliginosus</i>
DASYURIDAE	<i>M. giganteus</i>
<i>Antechinus swainsonii</i>	<i>M. robustus</i>
<i>Dasyurus maculatus</i>	? <i>M. rufogriseus</i>
<i>D. viverrinus</i>	<i>M. rufus</i>
<i>Phascogale tapoatafa</i>	<i>Thylogale billardieri</i>
<i>Sminthopsis crassicaudata</i>	<i>Wallabia bicolor</i>
PERAMELIDAE	PHASCOLARCTIDAE
<i>Chaeropus ecaudatus</i>	<i>Phascolarctos cinereus</i>
<i>Isoodon obesulus</i>	VOMBATIDAE
<i>Perameles nasuta</i>	<i>Vombatus ursinus</i>
<i>P. gunnii</i>	CHIROPTERA
PHALANGERIDAE	? <i>Pteropus poliocephalus</i>
<i>Trichosurus vulpecula</i>	? <i>Pt. scapulatus</i>
ACROBATIDAE	RODENTIA
<i>Acrobates pygmaeus</i>	<i>Conilurus albipes</i>
PETAURIDAE	<i>Hydromys chrysogaster</i>
<i>Petaurus australis</i>	<i>Leporillus apicalis</i>
<i>P. breviceps</i>	<i>L. conditor</i>
<i>Pseudocheirus peregrinus</i>	<i>Notomys mitchelli</i>
<i>Petauroides volans</i>	? <i>Rattus fuscipes</i>
POTOROIDAE	? <i>R. lutreolus</i>
<i>Aepyprymnus rufescens</i>	CANIDAE
? <i>Bettongia gaimardi</i>	<i>Canis familiaris</i>
? <i>B. lesueur</i>	
? <i>B. penicillata</i>	
? <i>Potorous tridactylus</i>	
? <i>P. longipes</i>	

? indicates that I am not confident of the specific identity of mammals reported in contemporary accounts.

Table 1. Native mammals reported from Victoria before the establishment of the National Museum of Victoria in 1854.

*australis* or 'squirrels', probably Greater Glider, *Petauroides volans*), Dingoes, dasyuri (i.e. *D. viverrinus*) and kangaroo (Kenyon 1932; Parris 1950).

Daniel Bunce landed at Port Phillip in October 1839, and soon after explored the country towards Western Port. He was the first recorded European to explore the Dandenong Ranges. He travelled with a group of Aboriginals and ate what was hunted by them—Common Brushtail Possum; 'Flying Squirrel' (probably *P. australis*, since he reported that lyrebirds mimicked 'the chuckle of the flying squirrel'); Koala; Wombat; 'Wollabee'—probably Black Wallaby; kangaroo (*M. giganteus*) and Short-beaked Echidna, *Tachyglossus aculeatus* (Bunce 1859).

George Arden extolled the virtues of 'Australia Felix, the finest province of the Great Territory of New South Wales' to new immigrants in 1840, and, among the natural resources he listed

	Forbes- Leith & Lucas 1884	Lucas 1890	Iredale & Troughton <sup>1</sup> 1934	Mahoney 1935	Brazenor 1950	Wakefield 1963	Warneke 1963	Franken- berg 1971	Menkhorst 1983	Menkhorst 1987	DCE 1991
<b>Order Monotremata</b>											
Family Tachyglossidae											
<i>Tachyglossus aculeatus</i>	+	+	+	+	+	+	+	+	+	+	+
Family Ornithorhynchidae											
<i>Ornithorhynchus anatinus</i>	+	+	+	+	+	+	+	+	+	+	+
<b>Order Marsupialia</b>											
Family Dasyuridae											
<i>Antechinomys laniger</i>	+	+	+						*	*	*
<i>Antechinus flavipes</i> <sup>2</sup>	+	+	+	+	+	+	+	+	+	+	+
<i>A. minimus</i> <sup>2</sup>						+	+	+	+	+	+
<i>A. stuartii</i> <sup>2</sup>						+	+	+	+	+	+
<i>A. swainsonii</i> <sup>2</sup>	+	+	+	+	+	+	+	+	+	+	+
<i>Dasyurus geoffroii</i>	+	+	+	*	*				*	*	*
<i>D. maculatus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>D. viverrinus</i>	+	+	+	+	+	+	+	+	*	*	*
<i>Ningau i yvonneae</i>									+	+	+
<i>Phascogale calura</i>	+	+	+		*				*	*	*
<i>P. tapoatafa</i>	+	+	+	+	+	+	+	+	+	+	+
<i>Planigale gilesi</i>										+	+
<i>Sminthopsis crassicaudata</i>				+	+	+	+	+	+	+	+
<i>S. leucopus</i>	+	+	+		+	+	+	+	+	+	+
<i>S. murina</i>	+	+	+		+	+		+	+	+	+
Family Peramelidae											
<i>Chaeropus ecaudatus</i>	+	+	+						*	*	*
<i>Isoodon obesulus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>Isoodon</i> sp. (cf. <i>auratus</i> )										*	
<i>Perameles bougainville</i>	+	+	+						*	*	*
<i>P. gunnii</i>	+	+		+	+	+	+	+	+	+	+
<i>P. nasuta</i>	+	+	+	+	+	+	+	+	+	+	+
Family Phalangeridae											
<i>Trichosurus caninus</i>	+	+		+	+	+	+	+	+	+	+
<i>T. vulpecula</i>	+	+	+	+	+	+	+	+	+	+	+
Family Burramyidae											
<i>Acrobates pygmaeus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>Burramys parvus</i>											
<i>Cercartetus concinnus</i>						+	+	+	+	+	+
<i>C. lepidus</i>									+	+	+
<i>C. nanus</i>	+	+	+	+	+	+	+	+	+	+	+
Family Petauridae											
<i>Gymnobelideus leadbeateri</i>		+	+	*	*	+	+	+	+	+	+
<i>Petaurus australis</i>	+	+	+	+	+	+	+	+	+	+	+
<i>P. breviceps</i>	+	+	+	+	+	+	+	+	+	+	+
<i>P. norfolcensis</i>	+	+	+	+	+	+	+	+	+	+	+
Family Pseudocheiridae											
<i>Pseudocheirus peregrinus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>Petauroides volans</i>	+	+	+	+	+	+	+	+	+	+	+
Family Potoroidae											
<i>Aepyrymus rufescens</i>	+				*	*			*	*	*
<i>Bettongia gaimardi</i>	+	+			*	*			*	*	*
<i>B. penicillata</i>	+		+			*			*	*	*
<i>Potorous longipes</i>									+	+	+
<i>P. tridactylus</i>				+	+	+	+	+	+	+	+

Table 2. Mammals recorded for Victoria by various authors between 1884 and 1991. \* Recorded as extinct.

	Forbes- Leith & Lucas 1884	Lucas 1890	Iredale & Troughton <sup>1</sup> 1934	Mahoney 1935	Brazenor 1950	Wakefield 1963	Warneke 1963	Franken- berg 1971	Menkhorst 1983	Menkhorst 1987	DCE 1991
<b>Order Marsupialia</b>											
<i>(continued)</i>											
Family Macropodidae											
<i>Lagorchestes leporides</i>	+	+		*	*				*	*	*
<i>Macropus fuliginosus</i>	+	+	+		+			+	+	+	+
<i>M. giganteus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>M. greyi</i>										*	*
<i>M. robustus</i>						+	+	+	+	+	+
<i>M. rufogriseus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>M. rufus</i>	+	+	+		+	+	+	+	+	+	+
<i>Onychogalea fraenata</i>	+	+	+						*	*	*
<i>Petrogale penicillata</i>	+	+			+	+	+	+	+	+	+
<i>Thylogale billardieri</i>		+	+	*	*	*			*	*	*
<i>Wallabia bicolor</i>	+	+	+	+	+	+	+	+	+	+	+
Family Phascolarctidae											
<i>Phascolarctos cinereus</i>	+	+	+	+	+	+	+	+	+	+	+
Family Vombatidae											
<i>Vombatus ursinus</i>	+	+	+	+	+	+	+	+	+	+	+
<b>Order Chiroptera</b>											
Family Pteropodidae											
<i>Pteropus poliocephalus</i>	+	+	+	+	+	+	+	+	+	+	+
<i>P. scapulatus</i>			+					+	+	+	+
Family Rhinolophidae											
<i>Rhinolophus megaphyllus</i>						+	+	+	+	+	+
Family Emballonuridae											
<i>Saccolaimus flaviventris</i>				+	+	+	+	+	+	+	+
Family Molossidae											
<i>Mormopterus planiceps</i>						+	+	+	+	+	+
<i>Mormopterus</i> sp. 1											+
<i>Mormopterus</i> sp. 2											+
<i>Tadarida australis</i>	+	+		+	+	+	+	+	+	+	+
Family Vespertilionidae											
<i>Chalinolobus gouldii</i>			+	+	+	+	+	+	+	+	+
<i>C. morio</i>			+		+	+	+	+	+	+	+
<i>E. 'pumilus'</i> <sup>3</sup>			+	+	+	+	+	+			
<i>Eptesicus baverstocki</i> <sup>3</sup>										+	+
<i>E. darlingtoni</i> <sup>3</sup>									+	+	+
<i>E. regulus</i> <sup>3</sup>									+	+	+
<i>E. vulturinus</i> <sup>3</sup>									+	+	+
<i>Falsistrellus tasuaniensis</i>								+	+	+	+
<i>Miniopterus schreibersii</i>						+	+	+	+	+	+
<i>Myotis adversus</i>						+	+	+	+	+	+
<i>Nyctophilus geoffroyi</i>			+	+	+	+	+	+	+	+	+
<i>N. gouldi</i>								+	+	+	+
<i>N. timoriensis</i> <sup>4</sup>						+		+	+	+	+
<i>Scotorepens balstoni</i>								+	+	+	+
<i>S. orion</i>										+	+
<b>Order Rodentia</b>											
Family Muridae											
<i>Conilurus albipes</i>	+	+				*		*	*	*	*
<i>Hydromys chrysogaster</i>	+	+		+	+	+	+	+	+	+	+
<i>Leporillus apicalis</i>					*			*	*	*	*

Table 2 (continued).

	Forbes-Leith & Lucas 1884	Lucas 1890	Iredale & Troughton <sup>1</sup> 1934	Mahoney 1935	Brazenor 1950	Wakefield 1963	Warneke 1963	Franken-berg 1971	Menkhorst 1983	Menkhorst 1987	DCE 1991
<b>Order Rodentia</b>											
<i>(continued)</i>											
<b>Family Muridae</b>											
<i>(continued)</i>											
<i>L. conditor</i>	+	+			*			*	*	*	*
<i>Mastacomys fuscus</i>			+	+	+	+	+	+	+	+	+
<i>Notomys mitchelli</i>	+	+	+	+	+	+	+	+	+	+	+
<i>Pseudomys apodemoides</i>							+	+	+	+	+
<i>P. australis</i>					*	*			*	*	*
<i>P. desertor</i>										*	*
<i>P. fumeus</i>				+	+	+	+	+	+	+	+
<i>P. hermannsburgensis</i> <sup>5</sup>	+	+			*				*	*	*
<i>P. novaehollandiae</i> <sup>5</sup>						+			+	+	+
<i>P. shortridgei</i>									+	+	+
<i>P. sp. nov.</i>						+				*	*
<i>Rattus fuscipes</i>	+	+	+	+	+	+	+	+	+	+	+
<i>R. lutreolus</i>			+	+	+	+	+	+	+	+	+
<b>Order Carnivora</b>											
<b>Family Canidae</b>											
<i>Canis familiaris</i>	+	+	+	+	+	+		+	+	+	+
<i>(continued)</i>											
<i>Hahnaturus brachyurus</i> <sup>6</sup>	+										
<i>H. thetidis</i> <sup>6</sup>	+										
<i>Bettongia grayi</i> <sup>7</sup>	+					*					
<i>Macrotis lagotis</i> <sup>8</sup>	+		+	*	*						
<i>Onychogalea lunata</i> <sup>9</sup>		+									
<i>Petrogale xanthopus</i> <sup>10</sup>			+								
<i>Pseudomys gouldii</i> <sup>11</sup>					*						
<i>Pseudomys oralis</i> <sup>11</sup>						*					
<i>Scoteinus sp.</i> <sup>12</sup>							+				

Table 2 (continued).

<sup>1</sup>Iredale & Troughton (1934) made no assessments of status, so that a number of species which were known to be extinct in Victoria are included together with extant species.

<sup>2</sup>Until the early 1960s when Wakefield & Warneke (1963, 1967) resolved the taxonomic confusion, specimens of *Antechinus* were assigned to either *A. flavipes* or *A. swainsonii*. Wakefield & Warneke (1963) demonstrated that *A. minimus* did occur in Victoria and in 1967 published a rationalisation of *A. 'flavipes'*, showing that *A. stuartii* and *A. flavipes* both occurred in the State.

<sup>3</sup>'*Eptesicus pumilus*' includes four species, now assigned to the genus *Vespadelus*: *V. baverstocki*, *V. darlingtoni*, *V. regulus* and *V. vulturinus* (Kitchener et al. 1987; Volleth & Tidemann 1989, 1991).

<sup>4</sup>*Nyctophilus 'timoriensis'* as here recognised was shown to be *N. gouldi* by Hall & Richards (1979), but true *N. timoriensis* is now recorded for Victoria (Robertson et al. 1989).

<sup>5</sup>*Mus novaehollandiae* was applied to specimens collected by Blandowski, which were identified as *Pseudomys hermannsburgensis* by Wakefield (1966). Brazenor (1950), who had noted the similarity between the species, considered *P. novaehollandiae* to be extinct although Troughton had 'correctly' identified the Blandowski animals as *P. hermannsburgensis* a decade earlier. Wakefield (1960) discovered *P. novaehollandiae* as a sub-fossil in caves in eastern Victoria and hence included it in his 1963 list; it was discovered as a living species in the State in 1970 (Seebeck & Beste 1970). Kemper (pers. comm.) examined the Blandowski material and concluded that it was *P. bolami*. Kitchener et al. (1984) incorporated *P. 'hermannsburgensis'* from Victoria in *P. bolami*.

<sup>6</sup>*Hahnaturus brachyurus* = *Setonyx brachyurus*, which is confined to Western Australia. *H. thetidis* = *Thylogale thetis*, of northern NSW and Queensland. One of these names is in error for *Thylogale billardieri* which was well-known for the State, although it is now extinct on the mainland.

<sup>7</sup>There is no evidence confirming that *B. lesueur* (= *B. grayi*) was extant in Victoria at the time of contact (Menkhorst 1987b; Menkhorst & Seebeck 1990) but it is present as a fossil in south-western Victoria (Wakefield 1972).

<sup>8</sup>Menkhorst & Seebeck (1990) have demonstrated that there is no evidence to include *M. lagotis* in the modern Victorian fauna.

<sup>9</sup>This was included by Wakefield on the basis of sub-fossil material only; there are no data to suggest it was extant in Victoria at the time of contact.

<sup>10</sup>Probably a misunderstanding. It should be *P. penicillata*.

<sup>11</sup>Both included on the basis of sub-fossil material. There is no evidence of either species being extant at time of contact.

<sup>12</sup>*Scoteinus* now = *Scotorepens*; at the time (1963) it was tentatively assigned to *S. greyi*.

Mitchell's Hopping-mouse, 'the different species of kangaroo and opossum tribes, the wombat, a kind of badger which burrows deep in the ground; a species of sloth, unnamed, which evinces a most extraordinary predilection for fur, and will hug a cat to death (I presume the 'sloth' to be the koala—but cannot explain the reputed cat-killing behaviour); the devil and opossum hyaena, formerly supposed to be peculiar to Van Dieman's Land; and the native dog.' The Platypus was frequently seen, and 'a species of wild cat prowls in the neighborhood of civilization, and is most destructive to poultry' (Arden 1840). (Both *D. viverrinus* and the Tiger Quoll, *D. maculatus*, have frequently been recorded as preying on poultry.) The Tasmanian Devil (*Sarcophilus harrisi*) and Thylacine, *Thylacinus cynocephalus* (for which 'opossum hyaena' was an early vernacular) did not occur in Victoria, despite Mr Arden's enthusiasm.

Joseph Lingard (1846) was a professional hunter in the Monaro district and the adjacent area of far east Gippsland during 1842–43. His list of species is extensive—'Wild Ferret' (*D. viverrinus*); bandicoot (at that locality Long-nosed Bandicoot, *Perameles nasuta*); Wombat; Koala; 'Flying Mouse' (*A. pygmaeus*); Common Brushtail Possum; Common Ringtail Possum; kangaroo rat (probably Long-footed Potoroo, *Potorous longipes*); kangaroo (*M. giganteus*); Common Wallaroo (*Macropus robustus*); Brush-tailed Rock-wallaby (*Petrogale penicillata*); Dingo; and 'Flying Fox' (*Pteropus*, probably Grey-headed Flying-fox, *P. poliocephalus*, but perhaps Little Red Flying-fox, *P. scapulatus*, as well); and 'Squirrel'. These were taken for skins, so it is most likely they were *Petauroides volans* and/or *Petaurus australis* (he refers to the squirrels 'screaming' at night, indicating *P. australis* which has a wide repertoire of vocalisation; *P. volans* is almost silent).

William Lockhart Morton (Randell 1978) travelled widely in Victoria from 1842 onwards. In that year he recorded kangaroos (*M. giganteus*) and Dingo near Camperdown; in 1843 'native cat' (*D. viverrinus*) at Drysdale; and Short-beaked Echidna at Mt Alexander in 1845. In 1847 he was at Watchem, in the southern Mallee, and encountered kangaroos (probably Western Grey Kangaroo) and Dingo.

William Brodribb (1883) recounted that an aboriginal named Charley Tara had caught Koalas to feed Count Paul Strzelecki during his explorations in west Gippsland in 1840. An account of Strzelecki's journey, published in the Port Phillip Herald in June 1840, reported that Charley also caught Common Wombats and kangaroos to feed the party (Honey 1961). Brodribb himself explored in Gippsland in 1842, and reported the presence

of large numbers of Rabbits on Rabbit Island off Wilson's Promontory, as well as many kangaroos (Eastern Grey Kangaroo) in the area now known as Port Albert. Note that this was three years before Thomas Austin's successful mainland introduction of Rabbits; they had been introduced to Rabbit Island in 1836 (Stokes 1846). Brodribb further noted 'opossum' (*T. vulpecula*) and 'kangaroos' near the Latrobe River. During his return to Western Port he, like Strzelecki, had to be fed by his aboriginal assistant, the same Charley Tara, who again displayed his skills at catching Koalas ('almost every day') as well as possums and bandicoots (in that area probably Long-nosed Bandicoot).

George Henry Haydon, writing to educate potential colonists (he was in Victoria during 1840–45, and was in the first party to traverse west Gippsland, accompanying G. A. Robinson in 1844) listed Platypus; bandicoot; Common Wombat; Koala; 'brushtail' possum (both Common Brushtail Possum and Mountain Brushtail Possum, *Trichosurus caninus*, may have been encountered); Common Ringtail Possum; 'Flying Squirrel'—he described both *P. volans* and *P. breviceps*; 'Paddemelon' (*T. billardieri*); kangaroo; wallaby and kangaroo rat (his description suggests Tasmanian Bettong, *Bettongia gaimardi*, rather than Long-nosed Potoroo, *Potorous tridactylus*) as well as Dingo and 'rats' (Haydon 1846).

Another such colonial educator was Dr James Clutterbuck, who, on returning to London in 1849, quickly published his advice (Clutterbuck 1850). Although he claimed no specialist knowledge of such matters, he listed Platypus, 'Wild Cat' (probably *D. viverrinus* but may also have included *D. maculatus*)—whose skins made 'handsome rugs'; bandicoot; Koala; 'Flying Squirrel'; 'possum' ('of the rat species!')—Common Brushtail Possum (also good for rugs; a six-foot-square rug cost 30 shillings); 'kangaroo rat' (probably *Potorous* sp.); Eastern Grey Kangaroo; Brush-tailed Rock-wallaby—and here his lack of knowledge emerged again, as he listed 'Rock Wallaby, or Badger, of the family of kangaroos'; Common Wombat; Dingo; and also noted the presence of Brown Rat and mouse. It is probable that this is the first published report of these introduced rodents (Brown Rat, *Rattus norvegicus* and House Mouse, *Mus musculus*) in Melbourne, rather than a confusion with native species.

The Sunbury district was first settled in 1836, and the family of Isaac Batey moved there 10 years later. In 1907 Batey set down his recollections of the 'Animal-life of the Sunbury district sixty years ago' (Batey 1907) and listed a wide range of species with which he had been familiar during the 1840s.

Bandicoot, brown: Southern Brown Bandicoot, *Isodon obesulus*  
 Bandicoot, banded: Eastern Barred Bandicoot, *Perameles gunnii*  
 Bat, common: No specific identification possible  
 Bat, vampire or flying fox: Grey-headed Fruit-bat, *Pteropus poliocephalus* [Little Red Fruit-bat, *P. scapulatus* is an occasional vagrant to western Victoria]  
 Bear, or sloth; Bear, young one on mother's back: Koala, *Phascolarctos cinereus*  
 Bull; Bullock, worker; Cattle; Cow, milch: Cattle, *Bos taurus*  
 Cat, domestic: Cat, *Felis catus*  
 Dasyure, black and spotted native cat; Dasyure, brown and spotted native cat: Eastern Quoll, *Dasyurus viverrinus*  
 Dog, domestic; Dog, wild; Dog, wild female; Dog, Barrukills dog: Dog, *Canis familiaris* and Dingo, *C. f. dingo*  
 Foal; Horse: Horse, *Equus caballus*  
 Jerboa, or bilboa: Scarlett (1969) identified this as the Greater Bilby, *Macrotis lagotis*, but Menkorst & Seebeck (1990) did not accept that identification. They suggested that the term may have referred to Burrowing Bettong, *Bettongia lesueur*, but considered the identification equivocal, as there is no evidence that that species was extant at the time of European settlement in Victoria.  
 Kangaroo, general name; Kangaroo, old male; Kangaroo, young male; Kangaroo, flying doe; Kangaroo, joey: Both Eastern (*Macropus giganteus*) and Western (*M. fuliginosus*) Grey Kangaroo, are probably included, the latter especially in the language used by northern tribes.  
 Kangaroo, red: Red Kangaroo, *Macropus rufus* [This species generally does not occur south of the Mallee; perhaps Dawson was told about it, or was confused with the following species]  
 Kangaroo, brush: Red-necked Wallaby, *Macropus rufogriseus*  
 Kangaroo, wallaby: Black Wallaby, *Wallabia bicolor*  
 Kangaroo rat: Long-nosed Potoroo, *Potorous tridactylus*  
 Kangaroo mouse: ?Mitchell's Hopping Mouse, *Notomys mitchellii* [As with the Red Kangaroo, this species does not occur south of the Mallee. Perhaps the name referred to one of the other native rodents, or to one of the small dasyurid marsupials]  
 Opossum, common; Opossum, old male; Opossum, old female; Opossum, young, in pouch: Common Brushtail Possum, *Trichosurus vulpecula*  
 Opossum, ringtail: Common Ringtail Possum, *Pseudocheirus peregrinus*  
 Platypus: Platypus, *Ornithorhynchus anatinus*  
 Porcupine, ant-eater: Short-beaked Echidna, *Tachyglossus aculeatus*  
 Rat, British rat: Either Black Rat, *Rattus rattus* or Brown Rat, *R. norvegicus*  
 Rat, rabbit-rat: Rabbit-eared Tree-rat, *Conilurus albipes*  
 Rat, water-rat: Water Rat, *Hydromys chrysogaster*  
 Sheep: Sheep, *Ovis aries*  
 Squirrel, large flying: Yellow-bellied Glider, *Petaurus australis*  
 Squirrel, small flying: Sugar Glider, *Petaurus breviceps*  
 Squirrel, feather-tailed: Feathertail Glider, *Acrobates pygmaeus*  
 Swine: Pig, *Sus scrofa*  
 Wombat: Common Wombat, *Vombatus ursinus*

He reported the following: Platypus; Swainson's Antechinus, *Antechinus swainsonii*; Eastern Quoll; Tiger Quoll; Brush-tailed Phascogale, *Phascogale tapoatafa*; Fat-tailed Dunnart, *Sminthopsis crassicaudata*; 'short-tailed Bandicoot, *Perameles* sp.' (Eastern Barred Bandicoot, *Perameles gunnii*); Koala; Common Wombat; Common Brushtail Possum; Common Ringtail Possum; Sugar Glider; Greater Glider; Water Rat and Dingo.

Even incidental records added to the identifiable species. Stokes (1846) landed on Phillip Island in January 1839, and disturbed 'a kangaroo, very dark colored, indeed almost black'. This was certainly the Black Wallaby.

James Dawson was one of the outstanding pioneers of the Western District. He settled near Port Fairy in 1844, and lived there until 1866, when he was forced to sell up. He returned to live near Camperdown until his death in 1900. During his many years in western Victoria, he studied the language and customs of the Aborigines, and in his account of their society (Dawson 1881) he published lists of three language group names of mammals, in addition to extensive vocabularies for many other aspects of Aboriginal life. The list of mammals includes native and introduced species' names, and is often very specific—separate words for male and female, old and young, were recorded for some species. The list of forms with separate names is given in Table 3.

George Augustus Robinson, Protector of Aborigines, toured parts of eastern and western Victoria from 1840 to 1849, and recorded extensive natural history observations (Mackness 1941; Presland 1977a, 1977b, 1980; Clark 1988). He added mostly only local records of known species but did record evidence of other species for the first time, e.g. Plains Mouse, *Pseudomys australis* (Seebeck 1984).

Manscrgh and Hercus (1981) listed and discussed some Gippsland aboriginal names for mammals. The sources upon which they based their work included two from the 1840s and 1850s, but most were from somewhat later in the century. Mountain Brushtail Possum, Common Brushtail Possum, either Yellow-bellied Glider or Greater Glider, potoroo, Eastern Grey Kangaroo, Red-bellied Pademelon, Brush-tailed Rock-wallaby, Dingo, Horse and Cattle were recorded in one or other language list before the mid-1850s. Many other species were recorded in later listing, including one of the few records of the White-footed Rabbit-rat.

Table 1 lists the species of non-marine mammal reported in Victoria prior to 1854.

#### RECORDS SINCE 1854

By the time William Blandowski was appointed

*Table 3.* Mammals included in James Dawson's language list which was compiled from western Victorian dialects, representing three language groups (from Dawson 1881). The list presents Dawson's English name; the modern vernacular; and the scientific name.

Zoologist to the new Museum of Natural History, on 1 April 1854 (Pescott 1954), the list of species known for the State was substantial (Table 1). Eight months later, Blandowski (1855a) was able to provide what was, in effect, the first formal list of species for the State, although some of the forms he described were not 'species' and there were, in addition, some species of which he was aware but was unable to make comment upon. He listed 29 forms—probably representing 26 or 27 species.

Pescott (1954) suggested that Blandowski may have begun to make a formal checklist of species, but, if he did so, the list has been lost. T. Darragh (Museum of Victoria, pers. comm. 1987) is not convinced that such a checklist was prepared.

During the 1850s Blandowski, and Gerard Krefft carried out surveys that added materially to the State's known fauna—in fact, their efforts provided the only records of some species for Victoria, particularly those of the semi-arid northwest of the State (Blandowski 1855a, 1855b; Krefft 1866; Wakefield 1966; Bennett et al. 1989).

In addition to such scientific enterprise, others were observing and recording their knowledge. Perhaps the most significant, in retrospect, was Horace Wheelwright, who was a professional hunter for the Melbourne market during the mid-1850s. Although his published account (Wheelwright 1861) lists only 26 species, mostly marsupials, it provides a specific local fauna for the vicinity of Melbourne. It also records many valuable observations on the habits of the animals encountered.

James Bonwick, Inspector of Denominational Schools, Victoria, toured western Victoria for three months in 1857. His account (Bonwick 1858) includes many reports of encounters with mammals, including Common Wombat, Water-rat, Platypus, Koala, possums (probably Common Brushtail Possum, as the skins were used by Aborigines), Dingo, 'opossum mice' (probably Eastern Pigmy-possum, *Cercartetus nanus*), 'perro' (probably Long-nosed Potoroo), kangaroos (probably Eastern Grey Kangaroo), bats (from caves in the Stony Rises; the Common Bent-wing Bat, *Miniopterus schreibersii* is known from Mt Porndon Cave); and 'wild eats', which may have been Tiger Quoll or Eastern Quoll or perhaps feral cats. Bonwick refers to the 'wild cats' living in caves, and their 'most undescrivable . . . ; repulsive growls' when disturbed. Both quolls and eats are capable of distinctive vocalisation.

Bonwick also commented upon the then recent discovery and description of *Thylacoleo carnifex*, the 'Marsupial Lion' and other extinct mega-fauna from near Colac, and other fossil mammals from near Portland and Mt Gambier.

W. L. Morton, who had earlier travelled in western Victoria (see Randall 1978) made an extensive tour of the Wimmera and southern Mallee in 1861. He published an account of that trip anonymously in 1861 and 1862 (An Old Bushman 1861/1862); that account was edited and reprinted by the National Parks Authority over a century later (Morton 1966). He recorded several instances of 'wallaby', 'paddymelon' and 'kangaroo rat' being hunted by his dogs, and described the nests of the latter two animals. The wallaby was likely to have been the Bridled Nail-tail Wallaby, *Onychogalea fraenata* (recorded by Krefft [1866] as 'common'); another possibility is Red-necked Wallaby, but that species generally occurs further south; the 'paddymelon' and 'kangaroo rats' were probably Eastern Hare-wallaby and Brushtailed Bettong. Morton also recorded opossum (probably Common Brush-tail Possum, since he took them for skins) and Common Ringtail Possum.

#### FORMAL LISTS OF SPECIES

The first published catalogue of Victorian native mammals appeared in 1884 (Forbes-Leigh & Lucas 1884). This contained the names of 52 species of non-marine mammals—2 monotremes, 41 marsupials, 6 rodents, 2 bats and the Dingo.

Six years later Lucas (1890) prepared an account of the fauna of Victoria for the Australasian Association for the Advancement of Science. His list was slightly shorter than the earlier one (50), and included several species not listed in 1884; it did not include a number that had been listed. He recognised that some species were already becoming scarce, and, by the omission of certain species, must also have recognised that some were no longer present in Victoria.

Ogilby's (1892) Catalogue stated or implied the occurrence in Victoria of 54 mammal species. Eight of these were bats, but only one (Chocolate Wattled Bat, *Chalinobus morio*) was specifically recorded for Victoria. The other seven species were reported for 'Eastern Australia', or 'Australia', so that comparisons with other lists can not be made with confidence.

By the mid-1930s (Iredale & Troughton 1934; Mahoney 1935) the total was little altered—56 species including 39 marsupials, 6 rodents and 8 bats. However, there had been changes in recognition and identification of the species present—some because they had become extinct, others by acceptance that the taxon did not, in fact, occur in Victoria. The greatest change was in the number of bat species recorded. It should be noted, also, that '*Eptesicus pumilus*' is now recognised to consist of four species in the genus *Vespadelus*—

*V. baverstocki*, *V. darlingtoni*, *V. regulus* and *V. vulturnus*—but these taxonomic distinctions have only recently been recognised (McKean et al. 1978; Kitchener et al. 1987; Volleth & Tidemann 1989, 1991).

In 1924 Charles Brazenor was appointed to the National Museum of Victoria as a preparator; later he became Mammalogist. During his years at the Museum knowledge of the Victorian mammal fauna, particularly the rodents, increased markedly. In 1950 he published 'The Mammals of Victoria', containing a list of 59 species of non-marine mammals (Brazenor 1950).

Some years later Warneke (1963) published a mammal checklist for the State. The list included only extant species and *D. viverrinus*, which had last been recorded in 1955 and might still have been extant. Of the 54 species he included, 32 were marsupials, 7 were rodents and 12 were bats. In the same year Wakefield (1963) contributed 'Mammals of Victoria' to the Victorian Year Book, and included in the article the names of 54 extant and 9 extinct species. But he included several species not listed by Warneke—who in turn, had listed two species not listed by Wakefield (see Table 2).

Twenty years later Menkhorst (1983) compiled a Working List which, in listing 69 extant species reflected the upsurge in survey effort and taxonomic rationalisation that had taken place. That increase had come about largely because of the introduction of new techniques of survey, and by new techniques of biological assessment. For example, two dasyurid genera, *Ningau* (in 1977) and *Planigale* (in 1986) were recorded by the use of pitfall traps in semi-arid zones (Fleming & Cockburn 1979; Lumsden et al. 1988), as was the Little Pygmy-possum *Cercartetus lepidus* (Dixon 1978), and many bat taxa have been found by the use of harp traps (Emison et al. 1984). Differentiation of species in several taxa of bats has been due primarily to modern biochemical and cytological techniques coupled with traditional methods.

A revised list (Menkhorst 1987b) reported the presence of 70 extant non-marine species. This list included a number of taxonomic changes, the addition of four species and the deletion of two others.

The 1991 list (DCE 1991) published in the Department's Wildlife Manual included an additional two species of bats but inadvertently omitted one species of bandicoot formerly present. Taxonomic reappraisal has shown that the rodent species *Pseudomys 'hermannsburgensis'* recorded for north-western Victoria is *P. bolami* (Kitchener

et al. 1984; C. M. Kemper, pers. comm.). This list also considered the Dingo as an introduced species.

Table 2 provides a summary of the species recognised by the authors quoted above.

This resumé serves to illustrate the spasmodic, at times rapid, accumulation of knowledge of even such a closely-studied group as the mammals. Many taxa were well known soon after the beginnings of European settlement—Wheelwright (1861) found it 'a matter of surprise to me that so much is already known of the general Fauna of this land'—but the smaller species were slow to be recognised. Nevertheless, all species of terrestrial mammals larger than 'rat-sized' (with one exception, *Potorous longipes* [Seebeck & Johnston 1980]) had been recorded for the State by the turn of the century, a tribute to the skills of the local natural historians.

What of the future? There are a few bat species which might be found to range into Victoria, and there may be other small terrestrial species present in the semi-arid north-west of the State, but most changes to the list of species are likely to result from taxonomic revision rather than by new discoveries.

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